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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,257	09/16/2005	Graham John Woodgate	053694-0126	1354

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FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER

FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

MAIL DATE	DELIVERY MODE
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09/05/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/544,257

Applicant(s)

WOODGATE ET AL.

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 August 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/3/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Species VI in the reply filed on 18 June 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claim 2 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 20, 99, 101.

4. The drawings are objected to because element 40 references a different element in figs. 4 and 5 than in the rest of the drawings.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure

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must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

6. The abstract of the disclosure is objected to because of undue length. Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities: In the brief description of drawing, "Fig. 7" should be --Figs. 7a-f--. Further, there is no fig. 9, so that description should be removed. Appropriate correction is required.

### *Claim Objections*

8. Claim 5 is objected to because of the following informalities: In claim 5 it is unclear what is "the birefringent optical axis birefringent material of the lens." For the purposes of examination it will be taken to be the birefringent optical axis of the birefringent material of the lens. Appropriate correction is required.

*Claim Rejections - 35 USC § 103*

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 3, 4, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferguson, US 5,537,256 in view of Cupolo, III, US 5,666,174 (henceforth Cupolo).

Regarding claims 1 and 4, Ferguson discloses a display apparatus (see figs. 1 and 6) comprising: a spatial light modulator (2) comprising an array of pixels each arranged to output substantially randomly polarized light (fig. 7 and column 9, lines 41-43); a birefringent lens (10 and 11, fig. 6) positioned to receive light from the spatial light modulator arranged to direct light of a first polarization component into a first directional distribution (5b, also see fig. 3) and to direct light of a second polarization component into a second directional distribution (5a, also see fig. 3) different from the first directional distribution (fig. 6); and a linear polarizer (12').

Ferguson discloses the claimed invention except for the spatial light modulator being an emissive spatial light modulator and wherein said pixels of the spatial light modulator contain an organic electroluminescent material; and providing a quarter waveplate, wherein the quarter waveplate is arranged between the spatial light modulator and the birefringent lens and the linear polarizer is arranged on the opposite side of the birefringent lens from the quarter waveplate. However, Ferguson further teaches in column 8, lines 48-55, that quarter waveplates may be used in conjunction with the display system. It would have been obvious to one of ordinary skill in the

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art at the time the invention was made to add a quarter waveplate arranged between the spatial light modulator and the birefringent lens as further taught by Fergason to convert the polarized light as needed for the optical coupling occurring in the various components (Fergason, column 8, lines 48-55). Fergason further discloses that the spatial light modulator can be any type of liquid crystal display source. Cupolo teaches an emissive liquid crystal display (see figs. 2 or 3) for spatial light modulation wherein said pixels of the spatial light modulator contain an organic electroluminescent material (column 10, lines 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the spatial light modulator of Fergason with the emissive spatial light modulator of Cupolo as it provides higher contrast and costs less (Cupolo, column 4, lines 34-35).

Regarding claims 3 and 7, Fergason further discloses wherein the birefringent lens (10 and 11) is an active birefringent lens (see figs. 3 and 6) switchable between a first mode of operation in which light having a polarization allowing it to be passed by the linear polarizer (12') is directed into said first directional distribution (5b) and a second mode of operation in which light having a said polarization allowing it to be passed by the linear polarizer (12') is directed into said second directional distribution (5b); wherein the second directional distribution is the same as the input distribution (fig. 6), whereby the birefringent lens has substantially no optical effect.

Regarding claim 5, Fergason in view of Cupolo as set forth above disclose the claimed invention except for explicitly stating that the optical axis of the waveplate is aligned at substantially 45 degrees to the alignment of the birefringent optical axis of the birefringent material of the lens at the surface of the lens closest the waveplate. However, it is very well

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known to align elements at substantially 45 degrees for polarization control as evidenced by Fergason (see figs. 4a-c and column 8, lines 1-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to align the waveplate and the lens at substantially 45 degrees as claimed to provide predictable polarization rotation and control of the light.

### *Conclusion*

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. May et al., US 5,671,034, Large, US 5,712,721 and Ito, et al., JP 01277203 A disclose birefringent lens elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Lee Fineman  
Patent Examiner  
AU 2872  
29 August 2007